

## Industry Terms

**Abrasion Resistance** - The ability of a fiber or fabric to withstand surface wear and rubbing.

### **ACRYLIC**

A synthetic polymer with excellent aging characteristics that can be used as either a single component adhesive or a coating composition.

### **ADHESION**

A bond produced between a pressure sensitive adhesive and a surface.

### **ADHESIVE**

Any material that will usefully hold two or more objects together solely by intimate surface contact.

### **ADHESIVE PROMOTER (adhesive primer)**

Adhesion promoter is most often used to increase the adhesion levels of low surface energy plastics such as: TPO, PP, PPO, PC, ABS and other plastic blends for bonding with pressure sensitive adhesives.

**ASTM D 1056-07** - American Society For Testing and Materials. This specification (D 1056) covers flexible cellular rubber products known as sponge rubbers and expanded rubbers. It is designed to provide certain physical property parameters and test methods for cellular rubber.

### **BACK-SLIT RELEASE LINER**

a release liner which is supplied split into multiple pieces, either by the act of slitting, or by laminating multiple strips of release liner. Often used as an alternative to a release tab.

### **BLOCKING**

Adhesion between the sheets of the plies of rolls of coated material, usually due to extreme conditions of pressure, temperature, or humidity.

### **BUTT CUT PARTS**

Rectangular or square parts in continuous form separated by a cut to the liner across the web.

### **BUZZ, SQUEAK, and RATTLE (BSR application)**

Undesirable noises typically caused by vibration between mating automotive components.

**Bun** - A cellular rubber product that is manufactured in a mold and is usually rectangular in appearance. Also known as a block and/or plank.

## **CARRIER**

A webstock that holds a pressure sensitive adhesive. A carrier most commonly refers to a layer of material used in the construction of double-faced or double-coated tapes.

**Cells** - Refers to the cavities or bubbles left in the foam structure after the walls have completely polymerized, which forms a skeletal structure. Cells can be closed (intact walls) or open.

**Cellular Rubber** - Low to medium density rubber products containing a cellular structure. The cells may either be open and interconnecting or closed and not interconnecting; a generic term for materials containing many cells (either open or closed, or both) dispersed throughout the mass.

## **COATING WEIGHT**

The weight of a coating per unit of area. This is usually expressed as grams per square meter.

## **COHESION**

The ability of the adhesive to resist shear stress and splitting. Good cohesion is necessary for clean tape removal.

## **COLD FLOW**

The tendency of a pressure sensitive adhesive to act as a heavy viscous liquid over long periods of time is a result of cold flow. Oozing and increase in adhesion with time are the result of this characteristic.

**Compression Deflection @ 25% (CD)** - The measure of the hardness of a cellular rubber product. In other words, the force required to compress a material 25% of its original thickness. It can be expressed in lb/in<sup>2</sup> (pounds per square inch) or kPa.

**Compression Force Deflection (CFD)** - A test which consists of measuring the force necessary to produce a 50% compression over the entire top area of the foam specimen. In other words, the force required to compress a material 50% of its original thickness. Also referred to as Compression Load Deflection (CLD).

**Compression Set** - The residual decrease in thickness of a test specimen measured 30 minutes or 24 hours after removal from a suitable loading device in which the specimen had been subjected for a definite time to compressive deformation under specified conditions of load and temperature.

## **CONVERTING**

The process of fabricating one form of material into a more advanced form.

## **CONFORMABILITY**

The ability of tape to fit snugly or make essentially complete contact with the surface of an irregular object without creasing, folding, or flagging.

## **CORONA TREATMENT**

A process that alters the surface of a material or its surface energy by exposing that material to a high voltage electrical discharge treatment. This is typically used to raise the surface energy of films such as polyethylene or polypropylene to obtain better adhesion of adhesives and other coatings. High-energy surfaces permit better wet-out (contact) of the coating than low energy surfaces.

## **CREEP**

The slow movement of the adhesive or backing under shear stress.

**Cross-Linking** - The bonding of molecules into a structure. This gives the polymer increased strength resulting in superior properties. Cross linking can be achieved by either physical (irradiation by an electron beam) or by chemical means.

## **DEADENED ADHESIVE**

A term that refers to temporarily or permanently neutralizing an adhesive through means of converting; typically, through lamination of an additional material. Deadened adhesive may be used to create selective patterns of functional adhesive coverage, i.e. to keep adhesive away from key surfaces or to function with automated dispensing equipment.

## **DELAMINATION**

A separation or splitting of the tape such as separation of the backing into two distinct layers, separation between laminations of a tape consisting of more than one backing, separation between filaments and backing of a filament reinforced tape, or separation of the adhesive from the backing.

**Densified foam** - Sometimes called felted foam, it is foam that has been permanently compressed through a precisely controlled thermal setting process.

**Density** - The weight in solids of a unit volume of material expressed in pounds per cubic foot (PCF) or grams per cubic centimeter ( $\text{g/cm}^3$ ). In other words, it is the ratio of the mass of a body to its volume.

**Dielectric Strength** - The maximum electric field that a foam rubber product can withstand without breaking down, usually measured in Kilovolts per centimeter. At breakdown, a considerable current passes as an arc, usually with more or less all decomposition of the material along the path of the current.

**DIE**

Any of various knife edged cutting or trimming tools or devices such as clicker dies, high dies, steel rule dies etc. They are used for cutting a desired shape into a soft or semi-rigid material.

**DIE-CUTTING**

The method of using sharp edged cutting dies to cut out shapes from a wide array of soft to semi-rigid materials. The action of making piece parts from bulk materials using cutting dies and presses.

**DIE-CUTTING PRESS**

Machine that holds the die, blanks or cuts the material into piece parts.

**DIE-CUTTING SURFACE**

This is any cutting surface that a die cuts against or cuts into in the die cutting process. The die-cutting surface can be any number of surfaces such as: hardened steel or plastic.

**DIELECTRIC STRENGTH**

The measure of the maximum voltage stress that a single layer of material can withstand before dielectric failure occurs.

**DOUBLE COATED**

An adhesive application to both sides of a backing.

**Durometer** - An instrument used to measure the hardness of a material. As a general rule, this method is not as accurate as compression deflection @ 25%. Types of durometers include Shore A, D and 00. The proper one to use for soft, cellular materials is Shore 00.

**ELASTICITY**

The extensible property of adhesive films or adhesive interfaces to contract and expand in such a manner as to overcome the differential contraction and expansion rates that the bonded adherends may exhibit.

**ELASTIC MEMORY**

A tendency of some tapes to attempt to return to their original length after being elongated.

**ELASTOMER**

An elastic, polymeric substance, such as natural or synthetic rubber.

**ELONGATION**

The distance a tape will stretch in the machine or cross direction before breaking under controlled conditions, expressed as a percentage of original length.

**EPDM** - Ethylene Propylene Diene. A polymer used in the manufacture of cellular rubber. It has excellent resistance to sunlight, ozone and heat, and good resistance to alkalis and acids.

**Extrusion** - Material that is formed by being heated and forced through a shaping orifice as a continuous body.

### **FACE STOCK**

Any paper, film, fabric, laminate, or foil material suitable for converting into pressure sensitive material stock. In the finished construction this web is bonded to the adhesive layer and becomes the functional part of the tape construction.

### **FLAME RESISTANCE**

It is the ability of a material to withstand exposure to flame. Fireproof materials will not burn even when exposed to flame. Flame-resistant (fire-retardant, self-extinguishing) materials will burn when exposed to flame, but will not sustain the burn after the flame is removed.

**Flame Retardant** - Resistant to catching fire. Usually, additives included in the manufacturing ingredients to prevent the material from catching fire, although some polymers are naturally resistant.

**Foam** - A product, either flexible or rigid, that has been produced by the internal generation of a gas in a fluid medium that is polymerizing while expanding in volume. The final result is either an open or closed-cell product.

### **HEAT RESISTANCE**

It is the ability of a tape to withstand exposure to specified temperatures after application to a surface.

### **HEAT SEALING**

The converting process of joining two or more thermoplastic films, with a special die, heat, and pressure. Heat sealing is also commonly used to cleanly fuse a synthetic fiber's edges, such as 3M™ acoustical dampening Thinsulate™ product.

### **HOT MELT (pressure sensitive adhesive)**

A pressure sensitive adhesive, applied to the backing in hot liquid form, which then cools to form a conventional pressure sensitive adhesive.

**Hydrophilic** - A foam that has an affinity for water or easily absorbs water. A sponge would be an example.

**Hydrophobic** - A foam that is resistant to water or won't easily absorb water.

**K Factor** - A measure of the thermal conductivity of heat insulation expressed as BTUs/sq. ft. Lower values indicate better insulating materials.

**Kiss-cutting** – pieces cut to size and rolled up on a non-stick liner

### **LAMINATE**

A web material formed by bonding two or more materials together as in a pressure-sensitive construction.

### **LOW SURFACE ENERGY**

Describes those materials which adhesive bonding may be difficult due to a lack of available electrons on its surface. Some LSE materials include: polypropylene, polyethylene, powder coated paints. Also note that some adhesives are designed specifically for use in LSE applications, as are ADHESIVE PROMOTERS.

**Machine Direction** - The long direction within the plane of a material, in other words, the direction in which the material is being produced by the machine.

### **MATRIX (WASTE SKELETON)**

The face material and adhesive surrounding a specialty-cut product, usually removed after die cutting.

**MVSS-302** - Motor Vehicle Safety Standard. This specification (302) describes test procedures used to determine the burn rate of parts, portions of parts, and composites used as interior trim parts in passenger cars, multipurpose passenger vehicles, trucks and buses.

**Neoprene** - Polychloroprene. A synthetic rubber discovered by the Du Pont Company in 1931. It is a polymer composed of carbon, hydrogen and chlorine. Its features include resistance to petroleum based fluids and flame resistance.

**Nitrile Rubber (NBR)** - Emulsion copolymers of Butadiene and Acrylonitrile in varying proportions. This chemical is used in the manufacture of expanded rubber primarily for its resistance to swelling in oils and solvents.

**Open Cell Rubber Material** - A rubber product produced by a specific manufacturing process that utilizes a chemical blowing agent that expands the mass during the vulcanization process. Open cell rubber is defined as materials whose cells are not totally enclosed by its walls and open to the surface, either directly or by interconnecting with other cells. The primary characteristics are that water, air or gas can pass through, much like the way water is absorbed by a dish sponge. This type of material is also excellent for padding and cushioning applications where low compression set is required.

## **NON-WOVEN MATERIALS**

Usually refers to paper 'tissues' or synthetics such as 3M™ Tyvek™.

## **OUT-GASSING**

The release of volatile components under heat or vacuum.

**Ozone Resistance** - The ability of a material to resist degradation in sunlight and/or outdoor exposure.

## **PEEL ADHESION**

The force per unit width required to break the bond between a pressure sensitive adhesive tape and the surface to which it has been applied when the tape is peeled back at a controlled angle at a standard rate and condition.

**Plasticizer** - A substance added to materials during the manufacturing process to improve flexibility, workability, etc.

**Plasticizer Migration** - Loss of plasticizer from an elastomeric compound. It often migrates to the surface of the material where it is absorbed by another product or evaporates. This process causes the material to lose its flexibility and can contaminate other products like adhesives.

## **POLYESTER LINER**

A polyester film that is silicone release coated. It provides an excellent die cutting surface and is also used on over laminating films to provide a smooth, glass-like surface of adhesive.

**Polyethylene** - A thermoplastic composed of polymers of ethylene.

**Polymer** - In dealing with sponge rubber, this is a large molecular chain made up of two or more monomers. These monomers are polymerized or chemically reacted to form a material that is significantly different than either of the two base monomers from which it was made.

**Polyurethane** - Any of various thermoplastic or thermosetting resins, widely varying in flexibility, used in tough chemical-resistant coatings and in adhesives, foams, and electrical insulation.

## **POLYPROPYLENE**

It is similar to polyethylene but stronger and having a higher temperature resistance. Various thermoplastics are polymers of propylene; excellent clarity.

## **PRESSURE SENSITIVE ADHESIVE**

It is a type of adhesive, which in dry form is aggressively tacky at room

temperature. It has the capability of promoting a bond to dissimilar surfaces on contact, with pressure.

**PRIMING (Adhesive promoter)**

Application of a thin layer of adhesive-like material to a backing or substrate to increase adhesion between materials.

**PULL TAB**

Area on a face stock that facilitates easy removal of the label, usually a cut area on a sheeted label

**PVC** - Polyvinyl chloride. A polymer used in the manufacture of expanded rubber. This compound is inherently fire retardant because of its high chlorine content.

**RELEASE COATING**

A coating applied to the backing on the side opposite the adhesive that provides ease of unwind and prevents delamination or tearing.

**RELEASE LINER (carrier, backing, liner)**

A web of sheet material used as a protective liner, which covers the adhesive side of the tape. It is removed prior to application. Most frequently found on double- sided tapes.

**REMOVABLE ADHESIVE**

A pressure-sensitive adhesive characterized by low ultimate adhesion and clean removability from a wide variety of surfaces.

Reticulated – process performed on foam that removes the window membranes of each cell leaving an intact skeletal structure; gaskets, filters, and acoustical applications

**ROTARY DIE**

A curved cutting die, used in a rotary die cutter. It can be constructed in several methods using curved steel rule blades more being machined by CNC or EDM methods from a solid cylinder blank.

**RUBBER BASED ADHESIVE**

Adhesives based on both natural and synthetic rubbers are well-suited to some general purpose applications. They offer high initial tack, but low environmental resistance.

**SAE-J-18** - A test method which covers flexible cellular products known as sponge rubbers and expanded rubbers. It is essentially the same as ASTM-D-1056. The SAE stands for Society of Automotive Engineers.

**SBR** - Styrene-butadiene rubber. A polymer used in the manufacture of expanded rubber. It is very economical and possesses no unique chemical resistance properties.

**SCE** - Terminology derived from the ASTM-D-1056-65 specification. The SC Designation stands for cellular rubbers made from synthetic rubber or rubber-like materials having oil resistance with medium swell. The E is a designation for closed-cell material.

**Scrim (Tissue)** - A thin layer of fabric type material that open-cell sponge rubber is extruded and cured upon. It primarily improves the bonding characteristics to PSA and other types of adhesives.

**Self-Extinguishing** - A somewhat loosely used term describing the ability of a material to cease burning once the source of flame has been removed.

**Shore** - A company that manufacturers testing and other related types of equipment. "00" is a type of durometer used to test the hardness of cellular rubber. "A" is a type of durometer used to test the hardness of solid rubber.

### **SHEAR ADHESION**

The time required, under specified test conditions (surface area, weight load), to slide a standard area of pressure sensitive tape from a standard flat surface in a direction parallel to the surface.

### **SINGLE FACED**

A tape to which a pressure sensitive adhesive is applied to only one side of the backing.

**Silicone** - A rubber made from silicone elastomers and noted for its retention of flexibility, resilience, tensile strength and wide temperature range.

**Skive** - To shave or cut off the surface of a rubber material in a horizontal manner. Sometimes referred to as splitting which means to divide sharply or cleanly into layers.

### **SLIT**

(1) To cut rolls of stock to specified widths. Either rotary or stationary knives or blades are used with either a rotating mandrel or mechanical unwinding and rewinding devices.

**Sponge Rubber** - A cellular rubber consisting predominantly of open cells made from a solid rubber compound. These products are manufactured in sheet, roll, strip, and molded or special shapes.

## **STEEL RULE DIE**

A cutting die that is produced by inserting sharpened pre-finished blades into jig sawed or laser cut die lines into a maple, birch or composite die board.

## **SURFACE ENERGY (surface wetting ability)**

The lower the surface energy of a substrate, the more difficult it becomes for an adhesive or coating to wet out that surface.

## **TACK**

The property of a pressure sensitive adhesive that allows it to adhere to a surface under very slight pressure. It is determined by the ability of the adhesive to wet quickly the surface it contacts.

## **TEAR RESISTANCE**

The force required to propagate a tear in a tape in a given direction after the tear has been initiated.

**Tear Resistance** - The force required to tear completely across a specifically nicked rubber test specimen or right angle test specimen, by elongating at a specific rate.

**Tensile Strength** - The maximum pounds per square inch (psi) that a material can be stretched lengthwise without tearing, expressed as a percentage of the original length.

Thermal conductivity – linear heat transfer per unit through a material for a given applied temperature gradient.

**Thermal formable** - To change the shape and/or structure of a material using heat and a suitable mild structure.

**Thermoplastic** - A material which is capable of softening or melting at elevated temperatures without degradation so that cooling of the material restores it to its original condition.

**Thermoset** - A material that is cured or transformed by elevated temperatures into a solid condition from which it does not change, upon reheating, until it reaches the decomposition point. Most urethane materials are thermosetting materials (e.g. flexible and rigid foams).

## **TOLERANCE**

The tolerance is an allowable deviation from a standard. A die customer should always specify the tolerance range allowed for his or her die cuts and a die maker should always ask what tolerances are required in a die before a die is constructed.

**TRANSFER TAPE**

A pressure sensitive adhesive unsupported applied to a two-side release coated liner.

**TRAVERSE WINDING (level winding)**

A specialty wound roll product, traverse winding refers to the process of winding typically narrower product evenly about a core or spool much wider than the product. Traverse winding allows for the creation of longer rolls, reducing roll change-over time.

**UL 94 HF1** - Underwriters Laboratory. The 94 is a specification for testing the flammability of plastic materials used for parts in devices and appliances. The HF-1 test is intended to be performed on foamed plastic materials. Other tests include 94 HBF, 94 V-O and 94 5-V

**Viscoelastic** - A term describing a urethane foam where the material will return to its initial form or state after deformation or compression.

**Water Absorption Test** - The process of submerging a piece of cellular rubber in distilled water and exposing it to increased atmospheric pressure. The foam is weighed beforehand and afterwards. The test measures the amount of water absorbed by the material. The lower the %, the less water the material absorbs.

**ZONE CUT ADHESIVE (zoned adhesive)**

A term that refers to partial adhesive coverage across a tape's release liner, carrier, or face stock, achieved through the process of converting a pressure sensitive tape