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ISO-9001:2015

GLOSSARY OF FOAM RELATED TERMS

“A”

Attenuation:

The reduction of the intensity of a sound signal.

Additive:

Anything that may be added to a foam mixture, not required to in order to produce the foam. Items such as plasticizers, colorants, colorants, antioxidants, and fillers.

Aliphatic:

One of the main divisions of organic compounds (those containing carbon) and particularly indicates those compounds having an open chain molecular structure.

Ambient:

The normal temperature of a room or environment in which the foam producing equipment or process is installed. It is often assumed to be 70 degrees "F".

A. S.T.M.:

The initials for the American Society of Testing and Materials.

“B”

Board Foot:

A standard of measurement in the foam industry which refers to a square foot of material (1) inch in thickness.

Bonding:

Synonym for gluing, adhering, laminating, or rebonding.

Bun:

Cut-off segment of the continuously produced loaf of flexible or rigid foam being made by the slab technique. In some cases this block would have a top, bottom, and side skins intact and have cut surfaces only on the ends. In other cases, the top, bottom, and side skins may be removed by in-line trimmers leaving a smooth rectangular block.

“C”

Cross-Linking:

The process of tying carbon and hydrogen molecules together to form polyethylene. Usually a chemical or radiation process.

Catalyst:

A chemical that has the property of being able to change the speed of a chemical reaction without apparently taking part in the reaction

Cell:

Known as a bubble or pore. It refers to the cavities left in the foam structure after the bubble walls have completely polymerized and solidified or curled back and fused into the boundary joints to form a skeletal structure.

Cell Count:

The number of cells per lineal inch or centimeter.

Cell Membrane:

The thin intact film that forms the bubble walls in closed cells, also know as windows.

Cell Size:

The average diameter of the pores (bubbles) in the final foam product. Although often still referred to as fine, medium, or coarse, or by the diameter in microns, most people refer to the number of cells per lineal inch.

Clickable Foam:

Foam that recovers 100% form the pinching effects of die cutting or pinching. It is foam that is less likely to have a sealed edge after being cut.

Closed Cell:

The property of foam where each individual pore is sealed off completely from its neighbor so that no exchange of gas can take place except by diffusion through the walls. With rigid foams, it is usual to try for 100% closed cells to achieve maximum thermal insulation ability and minimal water pick-up. With flexible foams, it is normal to try for 100% open cells for

Compression Load Deflection:

(C.L.D.) The determination of the resistance to compression of a foam sample when the entire area of the sample is compressed.

Compression Set:

The recovery of foam from static or fixed compression. Less than 10% compression set (which is greater than 90% recovery) is usually accepted as good. Also known as "Percent Set".

Compressive Strength:

The resistance of rigid foam to compression.

“D”

Density:

The weight of a specific volume of foam. Expressed as pounds per cubic foot.

Dielectric Constant:

That property of a dielectric which determines the electrostatic energy stored per unit volume for unit potential.

Durometer:

The measurement of hardness of a foam product. Expressed in terms of the scale in which it is measured, usually the Shore "o", 660-0" or "A" scales.

Discoloration:

The gradual yellowing of urethane foam due to a photochemical reaction occurring from the effect of certain wavelengths of light. It is faster in sunlight than artificial light.

Double Cells:

A synonym for the presence of a scattering of cells (2) to (4) times larger than the uniform background cell diameter.

“E”**Elongation:**

The percent of its original length to which a specially shaped material will stretch before breaking.

Elastic Medium:

A substance with the ability to return to its original dimensions after the removal of stresses.

Embrittlement:

To make brittle.

“F”**Fine Cells:**

A foam with a cell count of 80 or more per lineal inch.

Flame Retardant:

A flame retardant material imports a certain degree of flame retardancy to a foam, i.e. the foam will burn less rapidly.

Flammability:

The relative burnability of the material in a specified situation. Meanings vary according to test method.

Foam:

A product (flexible or rigid) that has been produced by the internal generation or liberation of a gas in a fluid medium that is simultaneously polymerizing while expanding in a volume.

“H”**Hydrophilic:**

An affinity to water. Hydrophilic are more absorptive and generally make better sponges.

Hydrophobic:

Water repellent properties or characteristics.

“I”**Indentation Force Deflection:**

(I.F.D.) Formerly (I.L.D.). The amount of compressive force (stress) needed to cause an indentation deflection (strain) of given magnitude. A measure of the firmness of a foam.

Intumescence:

The foaming and swelling of a plastic when exposed to high surface temperatures or flames.

Instron:

An instrument used to measure the tensile properties of foam.

In situ:

The chemical process of reticulation.

“K”**"K" factor:**

A measure of the insulation ability or thermal conductivity of the foam or material. In English the unit of measure is in BTUs/hour/square foot of area/degree F./inch of thickness. Since the measurement indicates positive heat flow, the relationship to insulating ability is inverse in that the higher the "K" Factor, the poorer is the insulation ability of the product and vice versa.

“N”**Non-Burning:**

An ambiguous term applied to certain formulations of foam fulfilling conditions in test method ASTM D 1692. Some of the foams with this label may burn quite rapidly.

“O”**Open Cells:**

A term applied to foam cell structures characterized by interconnecting cells or bubbles. A foam cell whose membranes have been removed through a post reticulation process.

Outgassing:

A vacuum phenomenon wherein a substance spontaneously releases volatile constituents in the form of vapors or gases. In rubber compounds, these constituents may include water vapor, plasticizers, air, inhibitors, etc.

Oleophilic:

Having a strong affinity for oil rather than water.

Ozone Resistance:

Ability to withstand the deteriorating effect of ozone (which generally causes cracking).

“P”**Permeability:**

The rate at which a liquid or gas can penetrate into or through a material in this case foam.

Plastic:

One of many high polymeric substances, including both natural and synthetic products, but excluding the rubbers.

Polyester:

One of the families of compounds that can be prepared with reactive hydroxyl groups and thus can be used as a polyol in the preparation of urethane foam. These polyol are generally more expensive than polyether polyols.

Polyether:

One of the families of compounds that can be prepared with reactive hydroxyl groups and thus can be used as a polyol in the preparation of urethane foam. These polyol are generally less expensive than polyether polyols.

Polymer:

A high molecular-weight organic compound, natural or synthetic, whose structure can be represented by a repeated small unit, the mer; Synthetic polymers are formed by addition or condensation polymerization of monomers. If two or more monomers are involved, a copolymer is formed. Some polymers are elastomers and some are plastics.

Polyol:

Is a chemical compound with more than one reactive hydroxyl group attached the molecule.

Polyurethanes:

These are families of chemical compounds that can be prepared by reaction of isocyanate containing material with a hydroxyl containing material.

“R”**Resilient Foam:**

A foam that has a very rapid recovery from extreme compression and a fairly linear increase in resistance to compression per inch.

Resin:

A term describing the unsaturated polymers or monomers used in the paint industry. In particular, those that apply to the polyester family. It is sometimes applied to the polyols in the urethane foam industry.

Resonance:

The normal or natural mode of vibration of a volume of air, panel of material rod, etc.

Reticulate:

The process of removing residual membranes or cell windows from the foam structure so that only a skeletal web like network remains.

Reticulated Urethane Foams:

Very low density urethane foams characterized by three-dimensional skeletal structure of strands with few or no membranes between the strands, containing up to 97% or more void space..

Resilience:

The amount of rebound when a steel ball is dropped on the foam. It is a measure of how bouncy a foam is. It is expressed as a percentage of the dropped height.

“S”**Self Extinguishing:**

The ability of a foam to stop burning after it has been started burning in a controlled manner. One test used to determine this is ASTM D1692.

Support Factor:

Also called the comfort factor. It is a function of IFD ratios and is an indication of how much "body" a foam has.

Sound:

A disturbance in an elastic medium creating a "hearing" sensation to a receiver.

Sound Absorption Coefficient:

The ration of the sound energy absorbed by a surface to the sound energy incident on that surface. Also expressed in percent of absorption.

Sound Pressure Level:

A value 20 times the log₁₀ of the ratio of the pressure of a sound to a reference pressure.

Sound Transmission Loss:

The ration of sound energy incident upon a panel to the sound energy radiated from the opposite side; expressed in dB.

Skin:

The higher density outer surface of a foam article. It is the result of surface cooling.

Slab Foam:

Foam made by the continuous pouring of mixed liquids on a conveyor generating a continuous loaf of foam as long as the machine is operating.

Sponge:

Classified as free rise foam. A blown elastomer, particularly those with high load bearing and higher densities (8 pounds per cubic foot and higher). It is sometimes used to describe an open cell product and sometimes to refer to a closed cell product.

“T”

Tear Resistance:

The ability of a piece of flexible foam to resist deepening a cut already made in the foam sample. Expressed in pounds/inch.

Tensile Strength:

Normally expressed as the pounds per square inch of force required to stretch a foam sample to the breaking point.

Thermal Conductivity:

The ability of a material to conduct heat; the physical constant for quantity of heat that passes through unit cube of a substance in unit of time when the difference in temperature of two faces is 1 degree.

Thermoset:

Materials that may not be reheated and softened again. Once the structural framework is set, these plastics cannot be reformed.

Thermoplastic:

Materials that become soft when heated and solid when cooled to room temperature. This softening and setting may be repeated many times.

“U”

"U" value:

The overall coefficient of heat transfer. This value incorporates all the factors involved in the transfer of heat from one area to another, including boundary layer transfer of any or all "K" factors. "U" values are generally used in calculating heat transfer of a structure in a particular environment; whereas "K" factors are generally used for single components of a structure.

Ultraviolet:

Zone of invisible radiations beyond the violet end of the spectrum of invisible radiations. Since ultraviolet wavelengths are shorter than the visible, their photons have more energy, enough to initiate some chemical reactions and to degrade most plastics.

Urethane:

A term used for years as the common name for a chemical more properly called "Ethyl Carbonate". The term is now used to refer to the product of a reaction between a chemical containing reactive hydroxyl groups on its molecule. These compounds are, for the most part, biologically inert. The compounds are called polyurethanes. Since the name refers to the molecular joint between the monomers, many different chemicals can be used as building blocks or monomers with the final product still being known as a urethane compound or polymer.

UV Stabilizer:

Any compound which, when mixed with a resin, selectively absorbs ultraviolet rays.

“W”

Water Absorption:

With rigid foam, percent by weight of water pickup on submergence of a specified sample under a specified depth of water.

Windows:

Cell membranes of walls in flexible foam that are broken or ruptured (but intact) which interfere with free air movement through the foam. Generally a high proportion of windows, as indicated by the shiny reflection of light through a cut surface, indicates a foam tending towards closed cells, which results in poorer physical properties.

Wave Length:

The wavelength of sound is the distance between analogous points on two successive waves.

About Merryweather Foam:

Since 1948, we have been industry leaders in fabricating unique, foam components for customers in the packaging, sound absorption, medical, and automotive industries. At Merryweather Foam, we pride ourselves on our ability to combine experience, innovation, and excellent customer service. We have the knowledge, manpower & equipment to help you get the job done. Visit our website to see our fabrication portfolio as well as our capabilities.

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