



Technical Definitions In foams



- Air Flow** A measure of the ease with which air will pass through a foam sample. (CFM or CMH)
- Ball Rebound** A test procedure used to measure the surface resiliency of flexible polyurethane foam. The test involves dropping a steel ball of known mass from a pre-determined height onto a foam sample. The rebound height attained by the steel ball, expressed as a percentage of the original drop height, is the ball rebound resiliency value. (%)
- Breathability** See Air Flow.
- CFC- Free Foam** Flexible polyurethane foams that have been made without the use of chloro-fluorocarbons as auxiliary blowing agents.
- Cell Count** The number of cells per linear inch or centimeter, expressed as pores per inch or pores per centimeter. (PPI or PPC)
- Cell Size** The average diameter of the cells in the final flexible polyurethane foam product, often measured in micron units.
- Clickability** The ability of a flexible polyurethane foam to recover from the pinching effects of die- cutting.
- Compression Set** A permanent partial loss of initial height of a flexible polyurethane foam sample compression due to a bending or collapse of the cell lattice structure within the foam sample. Large percentages of compression set will cause a flexible polyurethane foam cushion to quickly lose its original appearance with use, leaving its surface depressed or "hollowed out". (%)
- Density** The mass of a substance divided by its volume. Density is accepted as the weight of a substance divided by its volume. Foam density is often expressed as kilograms per cubic meter. (kg/CUM)
- Elongation** The percent that a specially shaped sample will stretch from its original length before breaking. (%)
- Fatigue** A tendency to soften under cyclic stresses. Fatigue of foam samples can be measured by cyclically compressing and relaxing a flexible polyurethane foam sample and measuring its change in IFD. (Kgf/sq.cm)
- Feel** See Hand. Felted - Flexible polyurethane foam that has been densified by heat and compression for use as a vibration dampening or shock absorbing material.
- Finger Nail** A quick, general test for springiness or stiff surface feel flexible polyurethane foam. A finger nail pressed into a foam sample that leaves a definite impression that does not quickly recover indicates a dead foam.
- Hand** Hand is the feel of the surface of flexible polyurethane foam when rubbed lightly. Stiff or hard feel is poor hand. Good hand is described as a springy, velvet feel.
- Hardness Index** Synonym for the 50% IFD value. Some furniture designs are for a maximum 50% indentation while some are for only a 20% indentation, ie., chairs versus bus seats.



Humid Aging	An accelerated aging test under conditions of high humidity and temperature.
IFD initial	25% IFD after compressing 65% of initial height)/25% IFD initial * 100.
Indentation Modulus	$IM = (40\%IFD - 20\%IFD) / 20\%IFD$. The force required to produce an additional 1% indentation between the limits of 20% IFD and 40% IFD determined without the one minute rest. The slope of this line represents the resistance of the cell struts to post buckling. The slope of the linear portion of the stress-strain curve is defined as the indentation modulus.
Initial Hardness Factor	$IHF = 25\%IFD / 5\%IFD$ determined without the one minute rest. This ratio defines the surface feel of a flexible foam. Soft surface foam will have a high IHF value, while stiff or boardy surface foams will have a low IHF value.
Initial Softness Ratio	See Initial Hardness Factor.
Modulus of Compression (MOC)	See Support Factor.
Permeability	The rate at which a liquid or gas can penetrate into or through a flexible polyurethane foam. Usually associated with airflow, a measure of the openness of the foam.
Pores Per Inch (ppi)	Unit for expressing cell count of a foam.
Porosity	The presence of numerous small cavities within a material. See Air Flow.
Pounding Fatigue	Accelerated fatigue aging of flexible polyurethane foam by cyclicly compressing samples to a specified percentage of their original height and releasing for a specified number of repetitions.
Recovery	The return to original dimension and properties of a flexible polyurethane foam sample after a deforming force is removed.
Resiliency	The ability of a surface to spring back to its original shape after being deformed and released. The resiliency of flexible polyurethane foam is measured using the ball rebound test.
Roller Shear	Procedure that fatigues a flexible polyurethane foam specimen dynamically at a constant force, deflecting the material both horizontally and vertically.
Static Fatigue	The loss in load bearing properties of a flexible polyurethane foam sample under constant compression of 75% for 17 hours at room temperature.
Support Factor	$Support\ Factor = 65\%IFD / 25\%IFD$ determined after one minute of rest or recovery. When based on 25% IFD values, the support factor indicates the 65% IFD values that will be attained by the foam. Seating foams with low support factor are more likely to bottom out under load.
Tear Strength	The ability of a piece of flexible polyurethane foam to resist propagation of a cut made in the sample.
Tensile Strength	The kilograms per square centimeter of force required to stretch a material to the breaking point.

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