

## Terms and Definitions of Support Surfaces

Historically, support surfaces were categorized into three types. While the terms “static” and “dynamic” were seemingly distinct, there was and is a lot of variability in each group with blurring of the meaning of the terms. Older terms “pressure reduction” and “pressure relief” have also been used to distinguish the degree of pressure redistribution provided by any surface. It is recognized that the word “pressure” comes from physics and describes a force over an area. In the pressure ulcer community, we have interchanged the word “force” in the physics language to mean load or weight on a bony prominence. Therefore, on gravity-based earth--- we cannot be weightless (or completely pressure free) and true pressure relief cannot and does not exist. Attempts to reduce pressure on a bony prominence must then be directed at the other part of the equation---“area”. Either the contact area of the skin can be increased, thus spreading weight more evenly, or the contact from some areas can be temporarily remove or shifted to other areas. In the first case, immersion and envelopment are the important methods used to increase the contact area of the skin. In the second, the change in contact pressure over time is a key consideration. So the term pressure redistribution is put forth as a more accurate term to describe what is accomplished by both of these approaches.

This set of definitions is provided in an attempt to redefine commonly used and confused terms and have been developed to describe the scientific terms used in the manufacturing of support surfaces and their components and characteristics prior to the placement of a patient on any of them.

It is important to begin by defining “support surface” as: A specialized device for pressure redistribution designed for management of tissue loads, micro-climate, and/or other therapeutic functions (i.e., any mattresses, integrated bed system, mattress replacement, mattress overlay or seat cushion, or seat cushion overlay).

## SCIENTIFIC TERMS USED IN SUPPORT SURFACES

TERM	DEFINITION	COMMENTS
<b>COEFFICIENT OF FRICTION</b>	A measurement of the amount of friction existing between two surfaces for a given force tending to hold the surfaces together. (9)	
<b>ENVELOPMENT</b>	The ability of a support surface to conform, so to fit or mold around irregularities in the body.	
<b>FATIGUE</b>	The reduced capacity of a surface or its components to perform as specified. This change may be the result of intended or unintended use and/or prolonged exposure to chemical, thermal, or physical forces. (10, 20)	
<b>FRICTION</b>	The resistance to motion of the external tissue sliding in a parallel direction relative to the support surface resulting in external tissue damage. (2, 14, 18)	
<b>IMMERSION</b>	Depth of penetration into a support surface.	
<b>LIFE EXPECTANCY</b>	The defined period of time during which a product is able to effectively fulfill its designated purpose. (5, 7)	
<b>MECHANICAL LOAD</b>	Definition to be determined	See AHCPUR Pressure Ulcer Prevention Guideline, 1992.
<b>PRESSURE</b>	The force per unit area exerted perpendicular to a surface. (4, 13, 14, 18)	
<b>PRESSURE REDISTRIBUTION</b>	The ability of a support surface to distribute load over the contact areas of the human body.  <i><b>This term replaces prior terminology of pressure reduction and pressure relief surfaces.</b></i>	
<b>PRESSURE REDUCTION/ PRESSURE RELIEF</b>	<i>These terms are no longer used to describe classes of support surfaces. The term is pressure redistribution; see above.</i>	<b><u>Deprecated term.</u></b>
<b>SHEAR</b>	An action or stress resulting from applied forces which causes or tends to cause two contiguous internal parts of the body to deform in the transverse plane (i.e., shear strain). (14, 18)	

## COMPONENTS OF SUPPORT SURFACES

Note: The portions of any support surface may be alone or in combination.

<b>TERMS</b>	<b>DEFINITION</b>	<b>Comments</b>
<b>CELLS/ BLADDER</b>	A means of encapsulating a support medium.	
<b>FOAM:</b>		
Viscoelastic	A type of porous polymer material that conforms in proportion to the applied load, and to the rate of loading.	
Elastic	A type of porous polymer material that conforms in proportion to the applied load. (3, 8, 12, 17)	
Closed cell	A non-permeable structure in which there is a barrier between cells, preventing gases or liquids from passing through the foam.	
Open cell	A permeable structure in which there is no barrier between cells, and gases or liquids can pass through the foam.	
<b>GEL</b>	A semisolid system consisting of a network of solid aggregates, colloidal dispersions or polymers which may exhibit elastic properties. (6, 10, 20, 21)	
<b>PAD</b>	A cushion-like mass of soft material used for comfort, protection or positioning. (18)	
<b>VISCOUS FLUID</b>	A fluid with a relatively high internal resistance to flow.	
<b>ELASTOMER</b>	Any material that can be repeatedly stretched to at least twice its original length; upon release of the stretch will return to approximately its original length.	

## FEATURES OF SUPPORT SURFACES

A functional component of a support surface that can be used alone or in combination with other features.

**SUPPORT SURFACE** : A specialized device for pressure redistribution designed for management of tissue loads, micro-climate, and/or other therapeutic functions (i.e. any mattresses, integrated bed system, mattress replacement, mattress overlay or seat cushion, or seat cushion overlay).

TERMS	DEFINITION	COMMENTS
<b>AIR FLUIDIZED</b>	A feature of a support surface that provides pressure redistribution via a fluid-like medium created by forcing air through beads as characterized by immersion and envelopment.	
<b>ALTERNATING PRESSURE</b>	A feature of a support surface that provides pressure redistribution via cyclic changes in loading <i>and unloading</i> as characterized by frequency, duration, amplitude, and rate of change parameters over the “active area” of the surface.	
<b>LATERAL ROTATION</b>	A feature of a support surface that provides rotation about a longitudinal axis as characterized by degree of patient turn, duration, and frequency.	
<b>LOW AIR LOSS</b>	A feature of a support surface that provides a flow of air to assist in managing the heat and humidity (microclimate) of the skin.	

### CATEGORIES OF SUPPORT SURFACES

<b>TERMS</b>	<b>DEFINITION</b>	<b>Comments</b>
<b>REACTIVE SUPPORT SURFACE</b>	A powered or non-powered support surface that changes mechanical load distribution only in response to external forces.	
<b>ACTIVE SUPPORT SURFACE</b>	A powered support surface, with the capability to change its mechanical load distribution properties, independent of external forces.	
<b>INTEGRATED BED SYSTEM</b>	A bed frame and support surface that are combined into a single unit whereby the surface is unable to function separately.	
<b>NON-POWERED</b>	Any support surface not requiring or using external sources of energy for operation. (18)	
<b>POWERED</b>	Any support surface requiring or using external sources of energy to operate. (18)	
<b>MATTRESS OVERLAY</b>	A support surface designed to be placed directly on top of an existing mattress. (1, 11, 22)	
<b>MATTRESS REPLACEMENT</b>	A support surface designed to be placed directly on the existing bed frame. (1, 11, 19, 22)	

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*This is the list of references that could be pieced together, many are incomplete and many are missing, Please supply those you have and mark the additions/deletions/corrections clearly*

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