

Reservoiring and Delivering Functions

General Description

Foamex cellular plastic flexible polyurethane foams are designed to perform a number of different functions or any combination of functions such as holding materials (reservoiring), transporting or carrying liquids (wicking), releasing ingredients (applying), and picking up residue (wiping).

Applications Include: Industrial lubricant pads, envelope wet sealing mechanisms, and shoe polish applicators. Also, uses in duplicator presses, clean room wipers, and scrub sponges.

Benefits Include: Controlled permeability and predictable surface area of the skeletal structure as a direct function of the totally open

pore cell size; conformation to contact surface and shape retention due to the resilient nature of polyurethane foams and excellent holding capacity and low flow resistance which are a result of the foam's high void volume.

Foamex Technical Products Group Cellular Plastics Include:

Industrial Foam (SIF®), SIF Felt® and specially engineered physical and chemical foam variations.

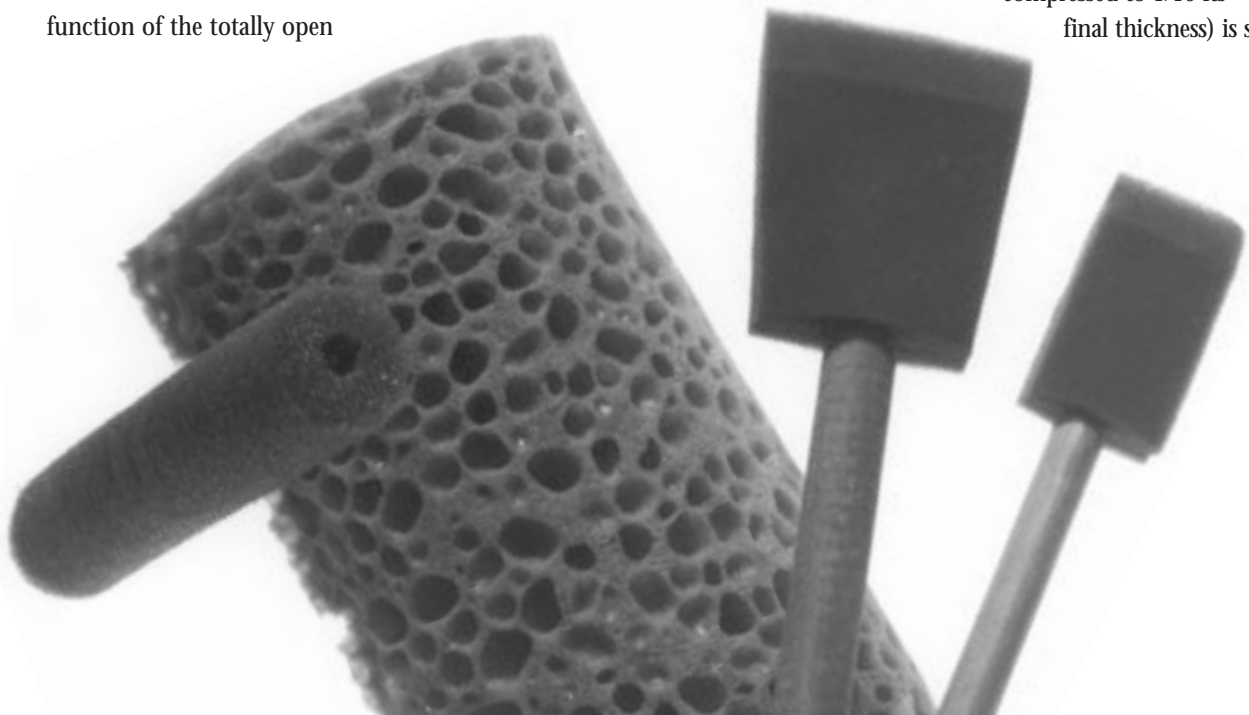
Industrial Foam (SIF®) is a reticulated, fully "open pore," flexible ester type polyurethane foam. It is characterized by a patented, totally open, three dimensional skeletal structure of

strands which provide a constant 97 percent void space and a very high degree of permeability.

SIF Felt® is a compressed, reticulated flexible polyester foam. It is made by compressing a foam with both pressure and heat to specified thicknesses.

Reservoiring

Reticulated Foams (SIF®) and SIF Felt® can hold many times their weight of various types of liquids and powders in their open cellular structure. This maximum loading capability results from the foams' 97 percent void volume. Even a highly compressed SIF Felt® (for example, foam permanently compressed to 1/10 its final thickness) is still



Products			
Functions	SIF®	SIF® Felt	Applications
Reservoiring	X	X	lubricator wicks wax applicator
Delivering	X	X	cosmetic applicators shoe polish applicators
Wicking		X	fabric softeners
Applying	X	X	scrub/wipe/sponge
Wipe/Scrub/Sponge	X	X	paint brush ink pads

Matrix for Functional Applications of Foamex Cellular Plastic Materials

approximately 70 percent void volume. Since these foams are a three-dimensional structure, they will hold ingredients on the surface as well as within the skeletal structure.

Ink Pads and Rollers: The versatility of the SIF Felt® process allows the selection of the right firmness (compression ratio of precompressed foam to final thickness) for maximum ink transfer and graphic reproduction. An extremely hard SIF Felt®, such as firmness 15 used for durable ink rollers, is 55 percent void volume and will retain ink in 50 percent or more of its void volume, eliminating the need to change pads or rollers as frequently. SIF Felt® wicking properties equalize the ink within the pad for print consistency and its resiliency helps prevent physical wear.

Dryer Fabric Softeners and Facial Cleaning Pads: A specially engineered physical and chemical variation of an ether foam is used to reservoir and release dryer fabric softeners. Soft, flexible and lint free, SIF® facial cleaning pads actually perform multiple functions. For example,

SIF Felt® Absorption Data		
Firmness	Oil Absorption	
	gms/cc	% by volume
2	.41	47%
4	.57	66%
6	.64	73%
8	.68	78%
10	.58	66%
12	.54	62%

while reservoiring many times their weight in additives, these pads apply and release additives in a controlled manner during use.

Other Applications: Oil reservoirs for permanently lubricated fractional horsepower electrical motors and lubricant pads for industrial equipment.

Applying: Industrial Foams apply, deliver, and meter various materials. By selecting the appropriate pore size, the transport of gases and liquids through the foam can be controlled within desired parameters. The resilient nature of SIF® foams allows carried ingredients to be released by pressure applied to the flexible foam substrate. The open-cell structure of SIF® foams permits a metered release and dispensing of powders and liquids.

Liquid Shoe Polish, Rug and Upholstery Shampoo Applicators:

With an appropriate pore size and controlled permeability, SIF® will meter ingredient flow from a container onto an applicator pad where the polish or shampoo is released by applying slight pressure.

Soft-applicator Tip or Puff:

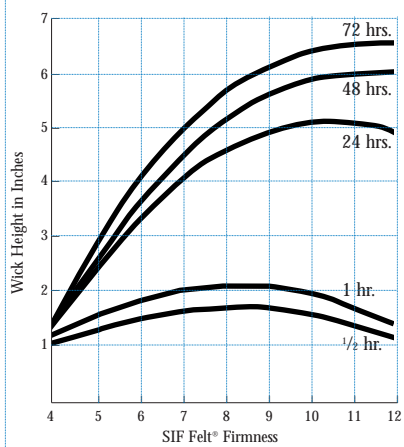
Industrial Foams are used as powder eye shadow brushes, liquid lip gloss applicators, powder puffs, and facial cleaning pads. The fine pore SIF® foams serve as “trap” applicators for car wax. The wax is “trapped” in the open-cell structure and is released by light pressure to automotive surfaces.

Duplication Presses and

Cleanroom Wipers: SIF® Foams are used in these applications because they are lint free and because they transfer and carry solvents.

Paint Brush: The open-cell structure, a characteristic of SIF® foam, readily picks up high-viscosity paints which are applied by pressure to the brush tip.

SIF Felt®—Oil Wicking as a Function of Firmness



Wicking

SIF Felt® compressed reticulated foams transport fluids from a reservoir to an application surface. The consistent and precise cell structure of SIF Felt® helps provide excellent, controllable capillary action. Cell strands generally do not break loose or crumble to inhibit the wicking action. The capillary wicking properties are a result of reduced average pore size which is achieved by compressing

reticulated foam. Since SIF Felt® is oleophilic, it will hold and transport oils to bearing wear surfaces.

Lubricated Electric Motors:

SIF Felt® is used to wick oil from a reservoir to a bearing.

Postage Machines: SIF Felt® transports ink in mailing equipment machines.

Other Applications: Felted, reticulated foam is used in thermal ink-jet printers to control back pressure and ink delivery.

Wiping/Scrub Sponge: SIF® is used as a wiper, sponge, or scrubber because of its open-cell structure, nonlinting solvent resistant and good loading properties. SIF® has a wide texture range from coarse (5 ppi) to very soft (100 ppi).

Cleanroom Wipe: Lintless, depth loading of picked up soil, and solvent resistant properties make SIF® an excellent cleanroom wiper.

Scrub Sponge: Scrubbers made from SIF® are relatively inexpensive and can therefore be considered semi-dis-

posable. It is possible to select the degree of scrubber abrasiveness due to the texture range of SIF®. It can be laminated to other foam grades to combine scrubbing and sponging.

Industrial Cleaning Sponge: SIF® sponge material is used by a major automotive manufacturer to solvent wipe automobiles prior to painting. The open-cell sponge traps mastic. The sponge is not adversely affected by the solvent.

Lintless Record Cloth: Fine pore SIF® is used as a record cleaning cloth. It is lintless; it holds anti-static treatment and does not redeposit the dust since it is held in the void structure of the foam.

Product Description

Physical properties include a totally open skeletal structure which is both flexible and resilient, a high surface area along with high void volume, and a range of pore sizes and densities.*

*The same pore size can be made at different densities. The strand diameter will increase as density is increased.

Typical Physical Properties*

Grades Available	Industrial Foam (SIF®)			SIF Felt®		
	10 to 100 pores per inch (ppi)			Firmness 2 to 20		
Ranges	Coarse 10 ppi	Medium 45 ppi	Fine 100 ppi	Soft 3	Medium 10	Hard 15
Density (lb/ft ³)	1.9	1.9	1.9	5.25	17.5	26.2
Tensile Strength (PSI)	20	28	35	50-80	160-200	220-270
Ultimate Elongation (%)	315	340	415	250-350	200-300	200-300
Tear Strength (lb/inch)	5.5	4.7	3.8	5-10	20-30	25-35
Abrasion Resistance	Good to excellent			Excellent		
Resilience	Good					

*Tested in accordance with ASTM D3574.
Typical physical properties are not to be used as specifications.

Pore Size: Industrial Foam pore size can be controlled over a wide range of 3 to 110 ppi (pores per linear inch) with tolerances controlled for most grades at plus or minus 5 ppi. The texture ranges from coarse and abrasive in the 5-ppi grades to soft and downy in the 100-ppi grade. Density is not related to pore size and is a nominal 1.75 pounds per cubic foot over the entire range.

Temperature Features: SIF® can withstand intermittent temperatures as high as 250°F, allowing the material to be sterilized with boiling water or steam. At temperatures above 525°F, Industrial Foam melts with decomposition and vaporization; at -40°F, Industrial Foam shows no evidence of cracking or tearing when bent around a mandrel equal in diameter to the foam thickness.

Chemical properties include resistance to water, soap, detergents, and perspiration. SIF® may be dry-cleaned and is not affected chemically by most standard oils, cleaning solvents, or greases at normal temperatures.

Aliphatic Hydrocarbons: Cause slight swelling while aromatics cause considerable swelling. Removal of the hydrocarbons allows the foam to regain its original dimensions and strength.

Plasticizer: SIF® contains no plasticizer; therefore, no migration difficulty will be experienced from the foam itself.

Strong Acids: Industrial Foam is attacked by strong acids, caustics, and chlorine and is not recommended for use in their presence unless protected by a coating.

Felted foams have good physical strength abrasion resistance and solvent resistant qualities. Felted foams can save space while maintaining high-performance quality.

Fabrication: Polyurethane foams are easy to cut, glue, staple, sew and form into unusual and complex curved shapes.

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IMPORTANT NOTICE REGARDING FLAMMABILITY— All polyurethane foams including combustion modified foams will burn and generate smoke and gases. Performance conditions and corresponding data refer to typical performance in specific tests, such as UL-94 and MVSS-302, and should not be construed to imply the behavior of this or any other product under other fire conditions. All data regarding these products were obtained using specific test methods under controlled laboratory conditions intended to measure performance against specifications. Due to the great number and variety of applications for which Foamex products are purchased, Foamex does not recommend specific applications or assume any responsibility for use results obtained or suitability for specific applications. Foamex warrants its products only to direct buyers. (See Foamex's Standard Terms of Sales for Foamex's warranty.) IN NO EVENT SHALL Foamex BE RESPONSIBLE FOR ANY CLAIM IN EXCESS OF Foamex's SALE PRICE OF THE PRODUCT TO WHICH THE CLAIM RELATES.

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