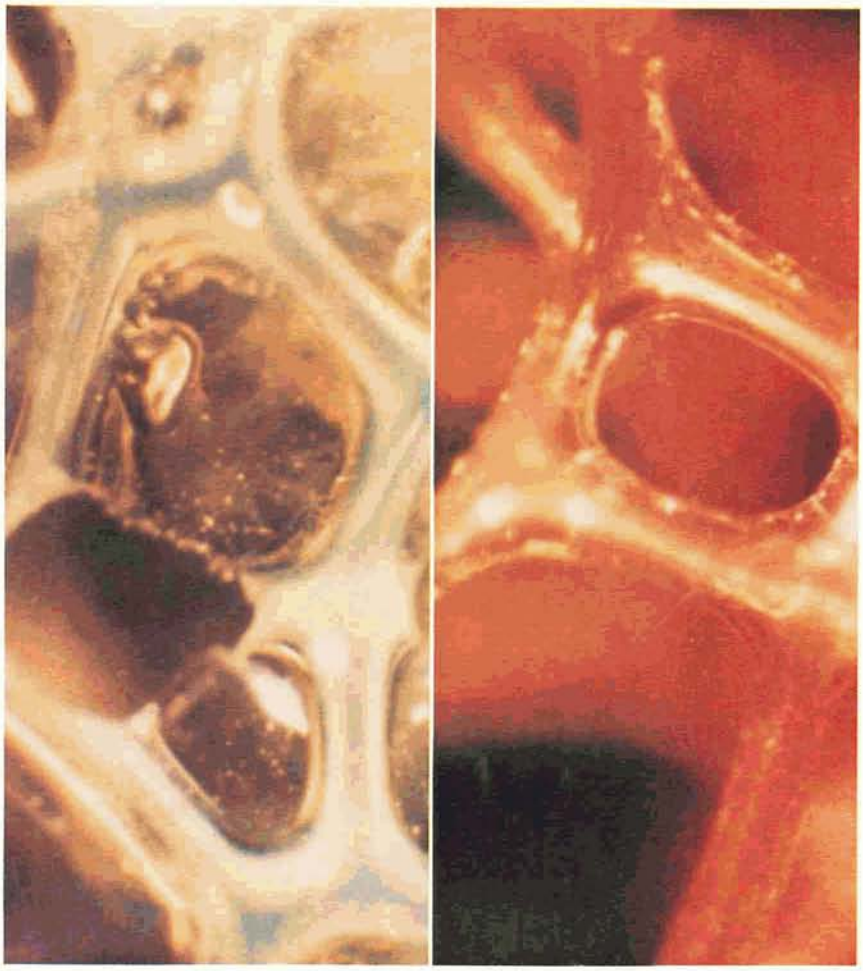
Among examples of aerospace technology application to consumer products is an innovative technique for producing a special type of plastic foam

Foam For Filtering

Like nature's honeycomb, foam is a structure of many-sided cells, apparently solid but actually only three percent material and 97 percent air. Foam is made by a heat-producing chemical reaction which expands a plastic material in a manner somewhat akin to the heat-induced rising of a loaf of bread.



The resulting structure of interconnected cells is flexible yet strong and extremely versatile in application.

Foam can, for example, be a sound absorber in one form, while in another it allows sound to pass through it. It can be a very soft powder puff material and at the same time a highly abrasive scrubber. A sampling of foam uses includes stereo speaker grilles, applying postage meter ink, filtering lawnmower carburetor air; deadening noise in trucks and tractors, applying cosmetics, releasing fabric softener and antistatic agents in home clothes dryers, painting, filtering factory heating and ventilating systems, shining shoes, polishing cars, sponge-mopping floors, acting as pre-operative surgical scrubbers—the list is virtually limitless.

The process by which foam is made produces "windows," thin plastic membrances connecting the cell walls. Windowed foam is used in many applications but for certain others—filtering, for example—it is desirable to have a completely open network. Scott Paper Company's Foam Division, Chester, Pennsylvania, improved a patented method of "removing the windows," to create an open structure that affords special utility in filtering applications. NASA technology contributed to Scott's improvement.

Under contract to Marshall Space Flight Center, Rockwell International prepared a manual detailing advanced techniques for cementing a variety of strain gages to many common engineering materials. A Scott engineer engaged in development of equipment for producing open structure foam

In these microscopic views of plastic foam, the left photo shows "windows," thin membranes connecting the cell walls. The right photo illustrates the different structure formed by a patented Scott Foam Division process called "reticulation." The process removes the membranes, creating a completely open network which allows air to flow freely through the foam while dirt and other particles are caught by the cell strands.

learned of the NASA technology and requested a technical support package. The information was used to install strain gages on a pressure vessel of the Scott-engineered "thermal reticulation" chamber and it was instrumental in reducing development time.

Reticulation, which means formation of an open network, is the process which fully opens the pores of the foam structure by removing the window-like membranes. This permits air to flow freely through the small apertures, while particles of dust or dirt adhere to the cell walls. That makes reticulated foam an effective filtering medium; it is used in air conditioners, humidifiers, home and commercial forced air furnaces, engine air filters, and a broad variety of other items manufactured in the appliance, automotive, medical equipment, consumer electronics, cosmetics and household products industries.

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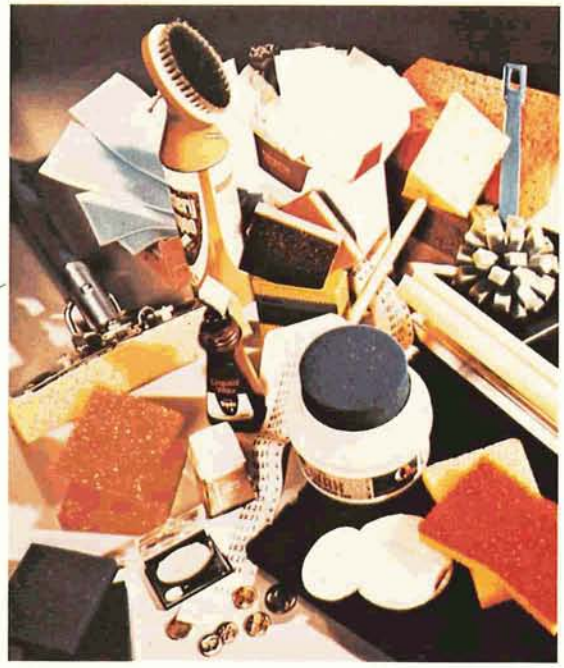

An assemblage of some of Scott Foam's consumer household and personal care products, some of which are made of reticulated foam.

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Photo shows an assortment of Scott's reticulated foam filters used in auto, lawnmower, motorcycle and other recreational vehicle engines.