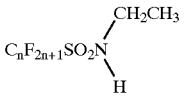
[0067] wherein n=8 (97 percent), n=7 (3 percent), and 10 weight percent or less of:

Formula 2



[0068] wherein n=8 (97 percent), n=7 (3 percent). Preparation of such agents is disclosed in U.S. Pat. No. 2,915,554 (Ahlbrecht et al.)

[0069] Other surfactant materials that are suitable for increased durability requirements for industrial applications of the present invention include Polystep® B22 (available from Stepan Company, Northfield, Ill.) and TRITON™ X-35 (available from Union Carbide Corp., Danbury, Conn.).

[0070] As discussed above, a surfactant or mixture of surfactants may be applied to the surface of the fluid control film or impregnated into the article in order to adjust the properties of the fluid control film or article. For example, it may be desired to make the surface of the fluid control film more hydrophilic than the film would be without such a component.

[0071] Preferred embodiments of the present invention retain the desired fluid transport properties throughout the life of the product into which the fluid control film is incorporated. In order to ensure the surfactant is available throughout the life of the fluid control film the surfactant preferably is available in sufficient quantity in the article throughout the life of the article or is immobilized at the surface of the fluid control film. For example, a hydroxyl functional surfactant can be immobilized to a fluid control film by functionalizing the surfactant with a di- or tri-alkoxy silane functional group. The surfactant could then be applied to the surface of the fluid control film or impregnated into the article with the article subsequently exposed to moisture. The moisture would result in hydrolysis and subsequent condensation to a polysiloxane. Hydroxy functional surfactants, (especially 1,2 diol surfactants), may also be immobilized by association with borate ion. Suitable surfactants include anionic, cationic, and non-ionic surfactants, however, nonionic surfactants may be preferred due to their relatively low irritation potential. Polyethoxylated and polyglucoside surfactants are particularly preferred including polyethoxylated alkyl, aralkyl, and alkenyl alcohols, ethylene oxide and propylene oxide copolymers such as "Pluronic" and "Tetronic", alkylpolyglucosides, polyglyceryl esters, and the like. Other suitable surfactants are disclosed in Ser. No. 08/576,255.

[0072] As discussed above, a surfactant such as a hydrophilic polymer or mixture of polymers may be applied to the surface of the fluid control film or impregnated into the article in order to adjust the properties of the fluid control film or article. Alternatively, a hydrophilic monomer may be added to the article and polymerized in situ to form an interpenetrating polymer network. For example, a hydrophilic acrylate and initiator could be added and polymerized by heat or actinic radiation.

[0073] Suitable hydrophilic polymers include: homo and copolymers of ethylene oxide; hydrophilic polymers incorporating vinyl unsaturated monomers such as vinylpyrrolidone, carboxylic acid, sulfonic acid, or phosphonic acid functional acrylates such as acrylic acid, hydroxy functional acrylates such as hydroxyethylacrylate, vinyl acetate and its hydrolyzed derivatives (e.g., polyvinylalcohol), acrylamides, polyethoxylated acrylates, and the like; hydrophilic modified celluloses, as well as polysaccharides such as starch and modified starches, dextran, and the like.

[0074] As discussed above, a hydrophilic silane or mixture of silanes may be applied to the surface of the fluid control film or impregnated into the article in order to adjust the properties of the fluid control film or article. Suitable silane include the anionic silanes disclosed in U.S. Pat. No. 5,585,186, as well as non-ionic or cationic hydrophilic silanes. Cationic silanes may be preferred in certain situations and have the advantage that certain of these silanes are also believed to have antimicrobial properties.

[0075] As previously mentioned, the channels of fluid control films of the present invention can be of any geometry that provides desired liquid transport. In some embodiments, the fluid control film will have primary channels on only one major surface as shown in **FIGS. 2***a*-**2***i*. In other embodiments, however, the fluid control film will have primary channels on both major surfaces, as shown in **FIGS. 2***j* and **2***k*.

[0076] As shown in **FIG. 2***a*, a fluid control film **20** of the present invention includes a layer **22** of polymeric material that has a structured surface **24** on one of its two major surfaces. The layer **22** includes a body layer **26** from which the structured surface **24** projects. The body layer **26** serves to support the structured surface **24** in order to retain the individual structured features together in layer **22**.

[0077] As shown in **FIG. 2***a*, channels **30** can be defined within the layer **22** in accordance with the illustrated embodiment by a series of v-shaped sidewalls **34** and peaks **36**. Each peak or projection may define a continuous ridge running along each channel, or the peaks may be formed as discontinuous elements (e.g., pins, bars, etc.) which still functionally serve to define the channels therebetween. In some embodiments, a cap layer (not shown in **FIG. 2***a*) is provided over the structured surface **24** to aid in channel definition. In some cases, the sidewalls **34** and peaks **36** may extend entirely from one edge of the layer **22** to another without alteration—although, in some applications, it may be desirable to shorten the sidewalls **34** and thus extend the peaks **36** only along a portion of the structured surface **24**. That is, channels **30** that are defined between peaks **36** may extend entirely from one edge to another edge of the layer **22**, or such channels **30** may only be defined to extend over a portion of the layer **22**. Channels **30** that extend only over a portion may begin at an edge of the layer **22**, or they may begin and end intermediately within the structured surface **24** of the layer **22**. The channels **30** are defined in a predetermined, preferably ordered arrangement over a continuous surface of polymeric material.

[0078] Other channel configurations are contemplated. For example, as shown in **FIG. 2***b*, a fluid control film **20'** has channels **30'** which have a wider flat valley between slightly flattened peaks **36'**. Like the **FIG. 2***a* embodiment, a cap layer (not shown) can be secured along one or more of the peaks **36'** to define discrete channels **30'**. In this case,