



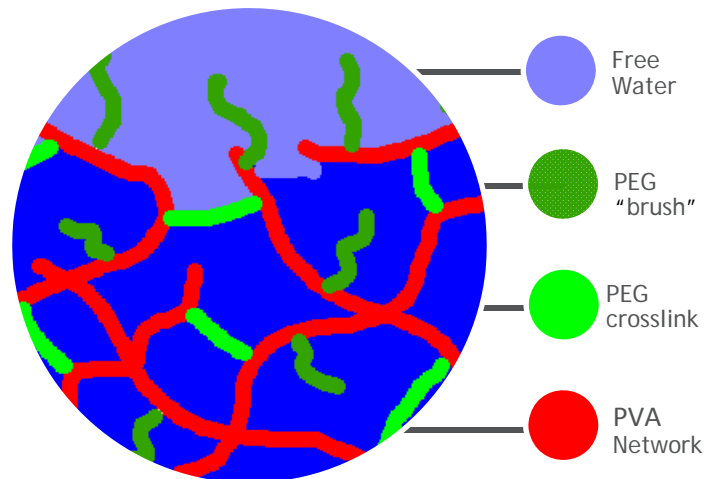
Replacing Cartilage with Hydrogels

Summary

Replacing cartilage with a functionally equivalent soft solid is considered a superior treatment for arthritic joints. Cambridge Polymer Group has patented a very low friction elastic hydrogel material based on the concept of entrapped hydrophilic moieties and dangling polymer brushes. This material was conceived as a synthetic analog to the structure of cartilage where collagen provides a network supporting and confining the highly water-loving proteoglycans.

Description

The material is a copolymer of vinyl alcohol and polyethylene glycol methyl ether methacrylate (PEG-MMA) manufactured in a unique manner. The PEG side chains form a hydrated lubrication sheath around the PVA main chain and constrain water within the network. This results in extremely low friction at the surface of the material. These materials are initially cast as vinyl acetate - PEG copolymers in the desired shape. Vinyl acetate groups are then converted to vinyl alcohol, and the material is equilibrated in water to form a gel. These materials are 30 to 80 % water, depending on composition, transparent and exhibit dynamic coefficient of friction values of less than 0.05, close to that of cartilage.



Applications

- Cartilage replacement
- Contact lenses
- Low friction interface for prosthetic joints



Deacetylated VA - PEG gel

