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Hydrogels

Hydrogel is a network of polymer chains that are water-insoluble, sometimes found as a colloidal gel in which water is the dispersion medium. Hydrogels are superabsorbent (they can contain over 99% water) natural or synthetic polymers. Hydrogels possess also a degree of flexibility very similar to natural tissue, due to their significant water content.

Common uses for hydrogel are:

- Currently used as scaffolds in tissue engineering. When used as scaffolds, hydrogels may contain human cells in order to repair tissue.
- environmentally sensitive hydrogels. These hydrogels have the ability to sense changes of pH, temperature, or the concentration of metabolite and release their load as result of such a change.
- as sustained-release delivery system
- provide absorption,desloughing and debriding capacities of necrotics and fibrotic tissue.
- hydrogels that are responsive to specific molecules, such as glucose or antigens can be used as biosensors as well as in DDS.
- In disposable diapers where they "capture" urine, or in sanitary towels
- Contact lenses (silicone hydrogels, polyacrylamides)
- medical electrodes using hydrogels composed of cross linked polymers (polyethylene oxide, polyAMPS and polyvinylpyrrolidone)

Other, less common uses include:

- Breast implants
- Granules for holding soil moisture in arid areas
- Dressings for healing of burn or other hard-to-heal wounds. Wound GEL are excellent for helping to create or maintain environment.
- reservoirs in topical drug delivery; particularly ionic drugs, delivered by iontophoresis (see ion exchange resin)

Common ingredients are eg. polyvinyl alcohol, sodium polyacrylate, acrylate polymers and copolymers with an abundance of hydrophilic groups. More information at:http://en.wikipedia.org/wiki/Hydrogels