HOLLOW FIBRE MICROFILTRATION AND ULTRAFILTRATION MEMBRANE

BRIEF DESCRIPTION:

Water pollution is a very serious problem in the world. Most of the world's surface water and many of the groundwater reservoirs have been contaminated due to biological and industrial pollutants. In this context development of indigenous Hollow fibre membrane based water purification technology is the need of the hour.

This technology has been successfully developed for manufacturing hollow fibre (HF) microfiltration (MF) and ultrafiltration (UF) membranes having discrete molecular weight cut off (MWCO) values from polymers like polysulphone, polyethersulphone polyvinylidene fluoride, polyacrylonitrile and blends of polysulphone and polyacrylonitrile. Hollow fibre membranes are made according to the wet phase inversion process under different conditions using the semi-automatic spinning unit. Fibres could be spun at a rate varying from 35-50 m/min.

The hollow fibres were found suitable for the removal of bacteria (6 log reduction), virus (4 log reduction), turbidity and colloidal materials (NTU reduction ≥ 99%) from contaminated water and thus produce safe drinking water. Hollow fibre modules of different sizes (60" X 4"; 40" X 4"; 20" X 4"; 20" X 2"; etc.,) were fabricated by potting both the ends of the bundle of fiber for practical applications.

COMPARATIVE ADVANTAGES:

The hollow fibre membranes exhibit solute cut off values in the range of 12000 to 91000 Da and are useful for the treatment of different types of solutions.
They exhibit 4-6 log bacterial rejections and are useful for disinfection of drinking water for the removal of harmful pathogens.
The presence of methacrylic acid functionality in the hollow fibres increases the negative charge as well as hydrophilicity of the membranes and thus imparts fouling resistance properties for the treatment of water and other contaminated water.
The fibres can be used in point of use domestic water purification units as well as large scale purification plants.

Scale of Development: Commercialised

