



# Composite Polyamide Reverse Osmosis (RO) Membrane for Brackish Water Desalination

Reverse osmosis (RO) is an efficient water purification technology for providing safe drinking water from saline and/or contaminated water. The technology developed by Membrane Development Section, BARC provides a process for the preparation of thin film composite polyamide (TFCP) membranes and the procedure to assemble them in commercially usable spiral modules. These membranes are capable of providing safe drinking water by removing 90% salinity from brackish water of TDS up to 5000ppm. Besides removal of salts, it also removes/reduces virtually all the contaminants from water like turbidity, heavy metals, fluoride, arsenic, halocarbons etc.

The entire process involves several steps like:

1. Preparation of polymeric microporous support membrane using casting machine.
2. Thin film coating of Polyamide over support membrane by in-situ polycondensation technique using appropriate reagents.
3. Assembling of TFC membranes in spiral module configuration.



Step-1

Step-2

Step-3

## Advantages & Applications

- Process is capable of removing dissolved salt to a tolerant level along with contaminants like iron, microbiological contamination etc. with high level of reproducibility from brackish water.
- Membrane modules can be used for small units suitable for domestic level as well as community size and bigger industrial applications.
- The technology can be applied for desalination of brackish water, water recovery and reuse (in pharma /biotech, waste water, electrocoating, food and beverage industries) and radioactive waste treatment.

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- Technical know-how of this TFCP-RO membrane preparation process is available on nonexclusive basis.
- The entire process of membrane making involves mostly locally available commercial grade chemicals and the final product is capable of giving safe drinking water w.r.t. total dissolved salts from brackish water sources.
- The preparation of support membrane part of the process require controlled environment with proper humidity and temperature. This also involves design and fabrication of a suitable membrane casting machine for large scale production.
- The coating part of the process also requires design and fabrication of a suitable membrane coating machine for large scale production.
- We provide only the conceptual process design but actual design and fabrication of machines for all the processes is under the scope of the licensee.

This technology has been transferred to following parties:

- M/s. Rupali Industries, Mumbai (Tel.No. 022-55837563, E-mail: [rupali\\_repale@yahoo.co.in](mailto:rupali_repale@yahoo.co.in)) (Presently making RO based domestic water purifier)
- M/s. Inventa Research Private Limited, Mumbai (Tel.No. 022-67049000, E-mail: [inventaresearch@gmail.com](mailto:inventaresearch@gmail.com)) (Makes RO spiral elements)
- M/s. Godrej & Boyce Mfg. Co. Ltd., Mumbai (Tel.No. 022-67962193, E-mail: [info@godrej.com](mailto:info@godrej.com)) (Developing infrastructure)
- M/s. Davey Products, Chennai (Tel.No. 022-67962193, E-mail: [svdavey@airtelmail.in](mailto:svdavey@airtelmail.in)) (Developing infrastructure)
- M/s. Solus Filtech Pvt Ltd, Surat (Tel.No. 0261- 2474521, E-mail: [info@solusfiltech.com](mailto:info@solusfiltech.com)) (Developing infrastructure)
- M/s. Aqua Dynamic Solution, Malkapur, Maharashtra (Tel.No. 08046044863, E-mail: [aquadynamic2@gmail.com](mailto:aquadynamic2@gmail.com)) (Developing infrastructure)
- M/s. Osmotech Membranes Pvt. Ltd., Rajkot, Gujarat (Tel.No. 09925125625, E-mail: [info@svinnovatives.com](mailto:info@svinnovatives.com)) (Developing infrastructure)

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