

A novel electro dialysis-distillation integrated process for recovery of DMSO solvent from pharmaceutical effluent

Title of Product/Design/Equipment	A novel integrated process comprising of electro dialysis for recovery of DMSO solvent from pharmaceutical effluent.
IPR Status Patent/Copyright/Trademark secured in Indian/Abroad IPR Details	<p>Name of the Invention: Electro dialysis-distillation hybrid process for the recovery of dimethylsulfoxide (DMSO) solvent from industrial effluent.</p> <p>Inventors: S. Sridhar, C. P. Ramulu, Y.V.L. Ravi Kumar, K.S.M. Raghunandan, M.G.V. Chalapathi Rao, K. Sunitha, B. Vishwanadham</p> <ol style="list-style-type: none"> 1. Japanese Patent JP5909190B2, Granted on 26 April 2016. 2. Great Britain Patent GB201208394D0, Granted on 27 June 2012. 3. Indian Patent No. 289556, Granted on 14 November, 2017.
Application/Uses	Removal of the explosive sodium azide to enable recovery of DMSO
Salient Technical Features including Competing Features	<p>Electrodialysis (ED) was employed for removing the hazardous NaN₃ along with NH₄Cl from aqueous solutions without significantly changing the composition of the non-ionic constituents such as DMSO.</p> <p>The desalted feed was sent to a two-stage distillation process for water removal and recovery of pure DMSO.</p> <p>The process developed showed a significant recovery of DMSO solvent from industrial effluent.</p> <p>A total of 25 kg of pure DMSO was recovered from a total desalted effluent quantity of 180 kg and subsequently the industry was able to recover 30 Metric Tonnes of DMSO solvent on a commercial scale</p>
Level/Scale of Development	Pilot Scale
Environmental Considerations	The process is environmentally benign and cost effective when compared to conventional processes
Status of Commercialization	Technology transferred

Major Raw Materials to be Utilized	Industrial Effluent, Rinse Solution, Water, Citric Acid.
Major Plant Equipment and Machinery Required	Electrodialysis Stacks
Techno-Economics	Technically and economically, it is a feasible process
Technology Package	Depends on the scale of production

For further information please contact

CSIR-Indian Institute of Chemical Technology
Uppal Road, Tarnaka, Hyderabad - 500 007 Telangana
E-mail: director@iict.res.in