

Glycerin to ECH technology

Breakthrough technology to produce
epichlorohydrin from glycerin



100 kta ECH plant, ABT, Map Ta Phut, Thailand

Epicerol[®] is our proprietary technology for the production of epichlorohydrin (ECH) from glycerin and is the benchmark method for producing high quality product on a consistent basis. The Epicerol trademark is recognized worldwide by leading clients because it is cost competitive and cleaner than other ECH processes.

Epicerol is a breakthrough technology with respect to conventional propylene-based processes and presents major advantages to other glycerin-based technologies.

Epicerol technological advantages

- Uses renewable versus fossil fuel raw materials
- Produces less CO₂ emissions and water effluents
- Creates fewer chlorinated by-products
- Consumes less water and chlorine and uses less steam

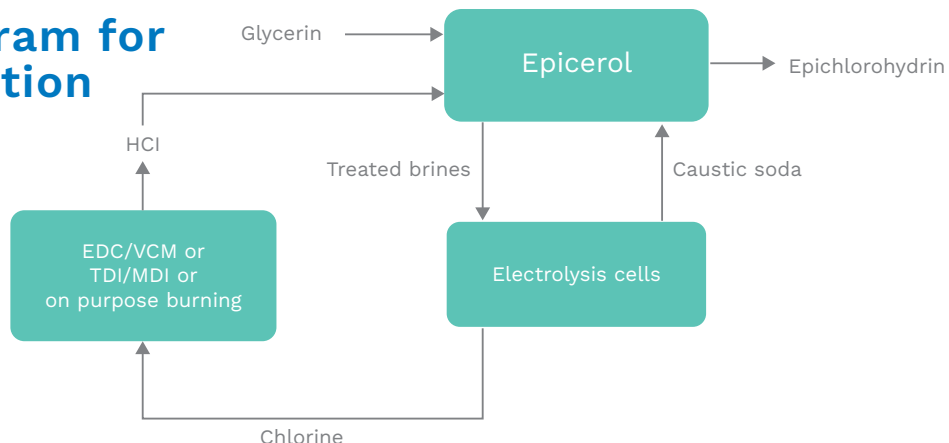
Process description

Conventional ECH is produced by reacting propylene with chlorine. The Epicerol technology processes glycerin (from renewable biofuels) to produce ECH.

Epicerol is produced through a two-step process:

- Dichloropropanol is produced through a reaction between glycerin and hydrochloric acid.
- ECH is then synthesized by dehydrochlorination of dichloropropanol with caustic soda (see the diagram below).

Block flow diagram for Epicerol integration





Epoxy resin end product



Solox section, ABT, Map Ta Phut, Thailand

What is Epicerol used for?

- ECH is primarily used in the production of epoxy resins used in plastics, adhesives and coatings
- It is also used in the manufacturing of textiles, solvents, pharmaceuticals, inks and dyes, and paper.

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Demonstrated technology

Epicerol is a proven technology, tested with a 100 kta industrial plant that has been running continuously since 2012. The plant, located in Map Ta Phut, Thailand, is owned by Advanced Biochemical Thailand (part of AGC Inc., Japan), and has demonstrated the ability to produce at full capacity, with 100% market quality achieved and up to 99.98% purity.

The technology is available for grass root plants with capacities ranging from 30 kta and above, or for revamping of existing propylene plants for clients who are seeking to increase capacity or to diversify the feedstock sourcing. In 2007, a propylene-based plant located in Tavaux, France, was indeed revamped by addition of glycerol-based reactional section, achieving higher capacity with limited investment. This plant has been operating continuously ever since.

Solox effluent treatment

Our patented Epicerol technology suite includes our proprietary Solox section for the treatment of brines produced during the dehydrochlorination step. Solox is an oxidative chemical-thermal treatment which transforms organic substances into CO_2 and water. It operates at low pressure and temperature and does not make use of direct O_2 . This allows brine recycling (Zero Liquid Discharge) or disposal as required by regulations. Solox may also be applied for clean-up of CaCl_2 effluents in other processes.