

Electrodialysis Pilot Plant for Mepiquat Pentaborate Production



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Objective

Use electrodialysis with bipolar membranes to produce mepiquat pentaborate, a new product for the cotton industry

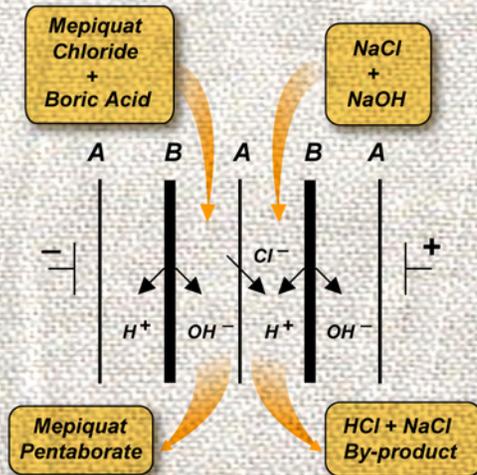
Present practice:

- ▶ use mepiquat chloride and boron solution on cotton plants to inhibit plant growth

New product, mepiquat pentaborate:

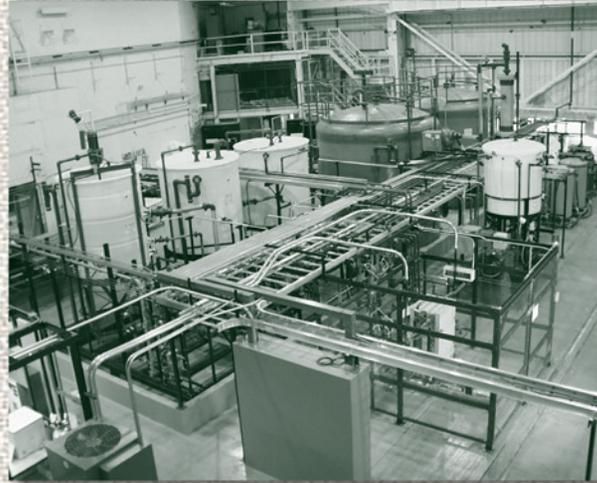
- ▶ improved hygroscopicity characteristics
- ▶ improved corrosion characteristics
- ▶ contains proven mepiquat ion
- ▶ easier boron application
- ▶ chloride free
- ▶ reduced environmental impact

Electrodialysis Concept



A = Anion-selective membrane
B = Bi-polar membrane

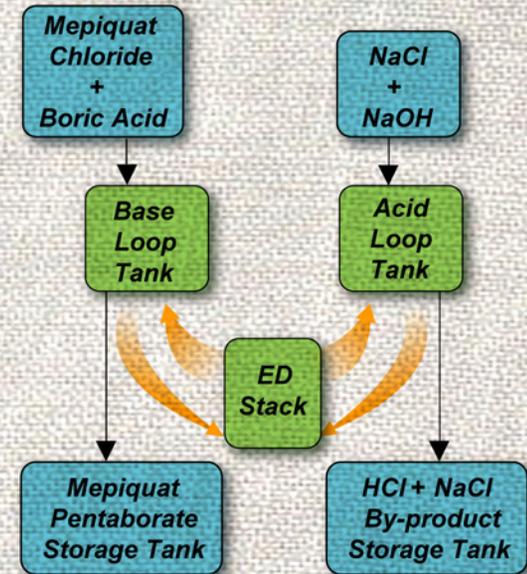
Pilot Plant Demonstration



Argonne's Electrodialysis Pilot Plant

- ▶ EUR 40-76 stack
- ▶ >100,000 gallon production in demonstration phase
- ▶ Patented process developed by BASF on bench scale
- ▶ Argonne scaled up process to pilot scale
- ▶ Feed materials supplied by BASF
- ▶ Product / by-product picked up by BASF in 5,000-gal tanker trucks

Batch Process Block Diagram



Conclusion

Electrodialysis processing with bipolar membranes is technically feasible for the commercial production of mepiquat pentaborate.

Acknowledgements

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