



TECH 2018S10: Fluorocarbons

Fluorocarbons is one in a series of reports published as part of Nexant’s 2018 Technoeconomics – Energy & Chemicals (TECH) program.

Overview

Fluorocarbons are commonly used for the following four commercially important applications: as refrigerants for refrigeration, air conditioning and heat pumps (RACHP); as feedstocks for fluoropolymers (polymer precursors); as blowing agents for foams; or as propellants for aerosols. The second generation of fluorocarbons, hydrochlorofluorocarbons (HCFC), which replaced chlorinated fluorocarbons (CFC) in the 1990s, are now undergoing replacement by third generation hydrofluorocarbons (HFC) and fourth generation hydrofluoroolefins (HFO). This TECH report will focus on the technology, cost of production, environmental impacts & restrictions, and markets for six leading fluorocarbons that are widely utilized today, as well as the three latest fluorocarbons that are being commercialized to replace legacy fluorocarbons that have negative environmental impacts. The following issues are addressed in this report:

- What technologies are used in the production of fluorocarbons?
- How do the process economics compare across different products and across regions?
- How big is the market for fluorocarbons? What are the major market applications and growth drivers?
- How has the Montreal Protocol to reduce ozone depletion potential (ODP) and Kigali Amendments to reduce global warming potential (GWP) impacted the regional demand for second, third and fourth generation fluorocarbons?

Materials Covered

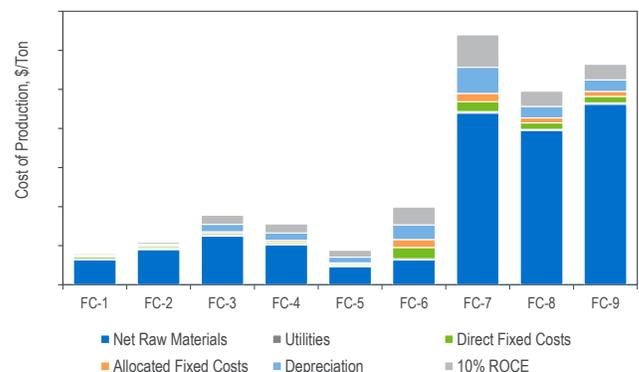
This report includes process descriptions and production economics for nine fluorocarbons including: HCFC-22 and HCFC-142b, which are still widely used for RACHP and polymer precursor applications; third generation fluorocarbons including HFC-32, HFC-125, HFC-134a, and HFC-152a which have replaced HCFC for RACHP applications in developed countries; and fourth generation fluorocarbons including HFO-1234yf,

HFO-1234ze, and HCFO-1233zd, which have near zero global warming potential, and are projected to rapidly replace second and third generation fluorocarbons over the next 30 years. Nexant reviews the historic and forecast consumption from 2010 to 2025 for ten important fluorocarbons (or fluorocarbons families) for the four main applications in seven regions: North America, South America, Western and Central Europe, Eastern Europe, Africa & Middle East, China, and Other Asia. Nexant also estimates fluorocarbon capacity by producer and location.

Process Economics

Detailed cost of production estimates for technologies for manufacturing nine fluorocarbons are presented for USGC, Western Europe, and China locations.

Regional Fluorocarbon Production Costs



Commercial Overview

The use of fluorocarbons for RACHP and as polymer precursors has driven rapid demand growth in China, Middle East/Africa and Other Asia. Chinese fluorocarbon producers already account for five of the top ten worldwide producers and China is the largest regional consumer of fluorocarbons, followed by North America. As incomes grow in these generally warm and under-served regions, consumers’ need for comfort (air conditioning) and convenience (refrigeration) will result in increased demand for highly efficient and effective refrigeration and insulation systems using the latest technology.



TECH 2018S10: Fluorocarbons

Subscribe to TECH

The TECH program (formerly known as PERP) is globally recognized as the industry standard source of process evaluations of existing, new and emerging of interest to the energy and chemical industries.

TECH's comprehensive studies include detailed technology analyses, process economics, as well as commercial overviews and industry trends. Reports typically cover:

- Trends in chemical technology
- Strategic/business overviews
- Process Technology:
 - Chemistry
 - Process flow diagrams and descriptions of established/conventional, new and emerging processes
- Process economics – comparative costs of production estimates for different technologies across various geographic regions
- Overview of product applications and markets for new as well as established products
- Regional supply and demand balances for product, including capacity tables of plants in each region
- Regulatory and environmental issues where relevant

Subscription Options

A subscription to TECH comprises:

- PDF reports including detailed technology analyses, process economics, as well as commercial overviews and industry trends
- Cost of production tables in spreadsheet format
- Consultation time with the project team

An annual subscription to TECH includes twenty reports published in a given program year. Reports can also be purchased on an individual basis, including reports from previous program years.

For more information, please contact
Technology@nexant.com or www.nexantsubscriptions.com



Nexant Subscriptions and reports provide clients with comprehensive analytics, forecasts and insights for the chemicals, polymers, energy and cleantech industries. Using a combination of business and technical expertise, with deep and broad understanding of markets, technologies and economics, Nexant provides solutions that our clients have relied upon for over 50 years.

Technology and Costs comprises the Technoeconomics – Energy & Chemicals (TECH) program (formerly known as PERP), the Biorenewable Insights program (BI), the Sector Technology Analysis, and the new Cost Curve Analysis. These programs provide comparative economics of different process routes and technologies in various geographic regions.

Nexant serves its clients from over 30 offices located throughout the Americas, Europe, the Middle East, Africa and Asia.

Corporate Headquarters

Tel: +1 415 369 1000
101 2nd St Suite 1000
San Francisco
CA 94105-3651
USA

Americas

Tel: +1 914 609 0300
44 S Broadway,
5th Floor White Plains
NY 10601-4425
USA

Europe, Middle East & Africa

Tel: +44 20 7950 1600
1 King's Arms Yard
London EC2R 7AF
United Kingdom

Asia Pacific

Tel: +662 793 4600
22nd Floor, Rasa Tower I
555 Phahonyothin Road
Kwaeng Chatuchak
Khet Chatuchak
Bangkok 10900
Thailand