Carbon fibers are a group of flexible, continuous or chopped, filaments derived from polyacrylonitrile (PAN), pitch, or rayon via a series of high temperature heating steps. These fibers have exceptionally high strength and high modulus. They are used in resin-based composites for the fabrication of parts in high performance aircraft, space vehicles, and sporting goods where carbon fibers save weight.

This supplementary report reviews the market conditions and technical progresses on carbon fibers since PEP Report 165 on the subject was released in September 1983. The economics developed in this report are for producing high-performance carbon fibers by the following technologies:

- A new process to produce precursor grade PAN by a melt extrusion process developed by BASF
- Stabilization, carbonization, and graphitization of the melt extruded PAN precursor to produce oxidized PAN, carbon fiber, and graphite fiber
- A new process developed by Tonen for the preparation of mesophase pitch as a carbon fiber precursor by heat treatment and hydrogenation
- Stabilization, carbonization, and graphitization of the mesophase pitch precursor to produce oxidized pitch fiber, carbon fiber, and graphite fiber.

For those who are in the carbon fibers business, this report will be useful for its extensive review of recently published literature and the comparative economics; for those considering entry into the business, it will be useful for its selection of technologies and feedstocks.
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